

MANUFACTURE OF INSULATING THIN FILM

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Abstract

PURPOSE: To perform film formation control which exhibits excellent repeatability over a wide area, by performing alternately two processes: a process to allow a hydride containing at least one silicon atom or its radical thereof to stick fast to the surface of a substrate and the process to supply an element or more at least out of elements: nitrogen or oxygen or gases of compound thereof.

CONSTITUTION: First of all, mono-silane is introduced in the side of a reaction chamber 1 by operating a three-way valve 2 for two sec. to make mono-silane attach on a substrate 4. Then, the three-way valve 2 is closed at the side of the reaction chamber for a second and a gas in the reaction chamber is replaced and then, ammonia is introduced in the reaction chamber 1 by operating the three-way valve 3 to nitrify an absorption layer which is formed by the first process. After carrying out the second process, the gas in the reaction chamber is replaced again for a second and after that, its process reverts to the first process. A treatment cycle consisting of these procedures are repeated as often as the times predetermined. In such a case, the film thickness of a growth is correctly in proportion to the number of cycle and its repeatability can be confirmed as well and the resultant film formation of an atomic layer order can be controlled. The film thickness distribution in this substrate is extremely uniform as such it is within + or -1%.

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